

PRODUCT	SIWHS02-15-MS-01
MMA	

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

A. PRODUCT NAME: MMA

B. APPLICATION: Artificial Marbles, Transparent ABS, MBS, Adhesives, SB-Latex, PMMA, Paint, Casting Sheet, Fiber Materials, Cement Fluidization Material.

C. COMPANY IDENTIFICATION LG MMA Corporation
 #759, Jungheung-dong, Yeosu-si, Jeollanam-do, Korea)
 Phone: +82-61-688-2530 / Fax: +82-61-688-2575

2. HAZARDS IDENTIFICATION

A. GHS CLASSIFICATION

PHYSICAL HAZARDS

Explosives: Not Classified.
 Flammable gases: Not Classified.
 Flammable aerosols: Not Classified.
 Oxidizing gases: Not Classified.
 Gasses under pressure: Not Classified.
Flammable liquids: Highly flammable liquid and vapor (Category 2).
 Flammable solids: Not Classified.
 Self-reactive substances: Not Classified.
 Pyrophoric liquids: Not Classified.
 Pyrophoric solids: Not Classified.
 Self-heating substances: Not Classified.
 Substances which, in contact with water, emit flammable gases: Not Classified.
 Oxidizing liquids: Not Classified.
 Oxidizing solids: Not Classified.
 Organic peroxides: Not Classified.
 Corrosive to metals: Not Classified.

HEALTH HAZARDS

Acute toxicity (Oral): Not Classified.
 Acute toxicity (Skin): Not Classified.
Acute toxicity (Inhalation (Gas or Vapor or Dust/mist/fume)): May be harmful if inhaled (Category 5).
Skin corrosion/irritation: Causes skin irritation (Category 2).
Serious eye damage/eye irritation: Causes serious eye irritation (Category 2A).
Sensitization (Respiratory): May cause allergic or asthmatic symptoms or breathing difficulties if inhaled (Category 1).
Sensitization (Skin): May cause allergic skin reaction (Category 1).
 Germ cell mutagenicity: Not Classified.
 Carcinogenicity: Not Classified.
Reproductive toxicity: Suspected of damaging fertility or the unborn child (Category 2).
Specific target organ systemic toxicity (Single exposure):
 May cause respiratory irritation and narcotic effects (Category 3).
Specific target organ systemic toxicity (Repeated exposure): Causes damage to the following organs through prolonged or repeated exposure – Respiratory system, Central nervous system (Category 1).
 Aspiration hazard: Not Classified.

ENVIRONMENTAL HAZARDS

Hazards to the aquatic environment (Acute): Harmful to aquatic life (Category 3).
 Hazards to the aquatic environment (Chronic): Not Classified.

B. WARNING LABELS, PICTOGRAMS, HAZARD STATEMENT AND PREVENTIVE MEASURE STATEMENTS

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PICTOGRAMS

SIGNAL WORD: **DANGER.**

HAZARD STATEMENTS

Highly flammable liquid and vapor.
May be harmful if inhaled.
Causes skin irritation.
Causes serious eye irritation.
May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.
May cause allergic skin reaction.
Reproductive toxicity: Suspected of damaging fertility or the unborn child.
May cause respiratory irritation and narcotic effects.
Causes damage to the following organs through prolonged or repeated exposure
– Respiratory system, Central nervous system.
Harmful to aquatic life.
Causes reproductive toxicity.

PRECAUTIONARY STATEMENTS

PREVENTION

(Physical hazards)

Keep container tightly closed.

Keep away from ignition sources such as heat/sparks/open flame– No smoking.

Wear protective gloves and eye/face protection as specified by the manufacturer/supplier or the competent authority.

Ground/Bond container and receiving equipment

- if electrostatically sensitive material is for reloading.
- if product is as volatile as to generate hazardous atmosphere

Use explosion-proof electrical/ventilating/lighting/equipment.

- other specified by the manufacturer/supplier or the competent authority.

Take precautionary measures against static discharge.

Use only non-sparking tools.

(Health hazards)

Wear protective gloves as specified by the manufacturer/supplier or the competent authority. Wash thoroughly after handling.

Wear eye/face protection as specified by the manufacturer/supplier or the competent authority.

Avoid breathing dust/fume/gas/mist/vapors/spray. In case of inadequate ventilation wear respiratory protection as specified by the manufacturer/supplier or the competent authority.

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Wear protective gloves as specified by the manufacturer/supplier or the competent authority. Avoid breathing dust/fume/gas/mist/vapours/spray. Contaminated work clothing should not be allowed out of the workplace.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required.

Use only outdoors or in well-ventilated area. Avoid breathing dust/fume/gas/mist/vapors/spray.

Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Do not breathe dust/fume/gas/mist/vapors/spray.

(Environmental hazards)

Avoid release to the environment
- if this is not the intended use.

RESPONSE

(Physical hazards)

In case of fire, use foam, powder or carbon dioxide for extinction appropriate media specified by the manufacturer/supplier or the competent authority

IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

(Health hazards)

IF INHALED: Call a POISON CENTER or doctor/physician if you feel unwell.

IF ON SKIN: Wash with plenty of soap and water. Take of contaminated clothing and wash before re-use. If skin irritation occurs, seek medical advice/attention.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention. Wash hands after handling

IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms call a POISON CENTER or doctor/physician.

IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs, seek medical advice/attention. Wash contaminated clothing before reuse.

IF exposed or concerned: Get medical attention/advice.

Call a POISON CENTER or doctor/physician if you feel unwell.

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

STORAGE

(Physical hazards)

Store in cool/well-ventilated place.

(Health hazards)

Store locked up.

Store container tightly closed in well-ventilated place.

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- if product is as volatile as to generate hazardous atmosphere.

DISPOSAL

Dispose of contents/container in accordance with local/regional/national/international regulation.

C. HAZARDS NOT INCLUDED IN GHS CLASSIFICATION

The vapor mixes well with air, explosive mixtures are easily formed. The product is readily polymerized by light, heat, or oxidants without inhibitor. If the polymerization takes place inside some containers, it is subject to violent rupture.

3. COMPOSITION / INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS No.	ENCS Number*	%(w/w)
Methyl methacrylate (MMA)	80-62-6	2-1036	> 99.9

* ENCS Number: Japanese Existing and New Chemical Substances.

4. FIRST AID MEASURES

A. EYE CONTACT

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

B. SKIN CONTACT

Remove/take off immediately all contaminated clothing. Rinse skin with water/shower or wash with plenty of soap and water. If skin irritation or rash occurs, seek medical advice/attention. Wash contaminated clothing before reuse.

C. INHALATION

If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms or feel unwell, call a POISON CENTER or doctor/physician.

D. INGESTION

Not a likely route of exposure. Do not induce vomiting without medical advice. There may be irritation to the gastro-intestinal tract with nausea and vomiting.

E. MAJOR TOXIC SYMPTOMS AND EFFECTS

May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.

F. NOTE TO PHYSICIAN

Skin contact may aggravate an existing dermatitis condition. Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition.

5. FIRE FIGHTING MEASURES

A. SUITABLE EXTINGUISHING MEDIA

Foam, powder, carbon dioxide [I/CSC].

Do NOT use straight streams of water. Do not use halogenated extinguishing agents.

Water spray may be used to keep fire exposed containers cool.

B. SPECIFIC HAZARDS ARISING FROM THE CHEMICAL

Above flash point, vapor-air mixtures are explosive within flammable limits noted Section 9 (Physical and chemical properties). Polymerization may be caused by elevated temperature, oxidizers, peroxides, or sunlight. Vapors can flow along surfaces to distant ignition source and flash back. Sealed containers may rupture when heated. Sensitive to static discharge.

During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

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C. SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE FIGHTERS

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit. Keep containers cool with water spray.

6. ACCIDENTAL RELEASE MEASURES
A. PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Eliminate all ignition sources. Restrict access to area as appropriate until clean-up operations are complete. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Stop or reduce any leaks if it is safe to do so. Ventilate spill area if possible. Ensure clean-up is conducted by trained personnel only. Do not touch spilled material. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Notify appropriate government, occupational health and safety and environmental authorities.

B. ENVIRONMENTAL PRECAUTIONS

Prevent material from entering sewers or waterways. Notify appropriate government, occupational health and safety and environmental authorities.

C. METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP

SMALL SPILLS: Soak up spill with absorbent material (sand or other non combustible adsorbent material). Place residues in a suitable, covered, properly labeled container. Wash affected area.

LARGE SPILLS: Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Clean contaminated surfaces with water or aqueous cleaning agents. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

7. HANDLING AND STORAGE
A. PRECAUTIONS FOR SAFE HANDLING

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Do not breathe vapors/gases/dust. In case of inadequate ventilation wear respiratory protection. Keep the containers closed when not in use. Use non-sparking type tools and equipment, including explosion proof equipment. Use connections properly earthed to prevent generation of electrostatic charges. Vapors are heavier than air and may travel considerable distances to a source of ignition and flash back. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labelled. Do not use, store, spill or pour near heat, sparks or open flame.

B. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Store in suitable labelled containers. Store the containers tightly closed. Store away from heat and sources of ignition. Protect from direct sunlight. Keep containers placed in cool, well-ventilated areas at temperature not exceeding 30 °C. Have appropriate fire extinguishers available in and near the storage area. Store separately from incompatibles. Connections must be grounded to avoid electrical charges.

* Fill the container by approximately 90 % only as oxygen (air) is required for stabilization. With large storage containers, make sure the oxygen (air) supply is sufficient to ensure stability [ECETOC].

8. EXPOSURE CONTROLS/PERSONAL PROTECTION
A. OCCUPATIONAL EXPOSURE LIMITS
KOREA

Korea. OELs (ISHL Article 42; MOL Public Notice No. 1986-45, as amended through MOL Public Notice No. 2007-25, June 8, 2007)

CAS RN: 80-62-6

Name: Methyl methacrylate

The 8-hour TWA: 50 ppm.

The 8-hour TWA: 205 mg/m³

The 15-minute STEL: 100 ppm.

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The 15-minute STEL: 410 mg/m³

JAPAN

Japan. OELs - JSOH (Japan Society of Occupational Health: Recommendation of Occupational Exposure Limits, 2007)

CAS RN: 80-62-6

Name: Methyl methacrylate

Skin sensitizer: 2 (Probable skin sensitizer).

Respiratory sensitizer: 2 (Probable respiratory sensitizer)

OSHA

OSHA Table Z-1 Limits for Air Contaminants (June 30, 1993)(29 CFR 1910.1000)(1971 Permissible Exposure Limits (PELs))

CAS RN: 80-62-6

Name: Methyl methacrylate

OSHA Z-1 PEL: 100 ppm

OSHA Z-1 PEL: 410 mg/m³.

ACGIH

ACGIH Threshold Limit Values (2007)

CAS RN: 80-62-6

Name: Methyl methacrylate

Sensitizer

Carcinogen Category: A4 (Not Classifiable as a Human Carcinogen)

The 8-Hour Exposure Limit (TLV-TWA): 50 ppm.

The 15-minute STEL: 100 ppm.

NIOSH

NIOSH. Pocket Guide to Chemical Hazards, 2005

CAS RN: 80-62-6

Name: Methyl methacrylate

NIOSH Recommended exposure limit (REL) [for up to a 10-hour workday during a 40-hour workweek]: 100 ppm.

NIOSH Recommended exposure limit (REL) [for up to a 10-hour workday during a 40-hour workweek]: 410 mg/m³.

NIOSH Immediately dangerous to life or health (IDLH) concentration: 1,000 ppm.

B. ENGINEERING MEASURES

General ventilation is recommended. Use local exhaust ventilation if necessary to control airborne mist and vapor. Provide mechanical ventilation of confined spaces.

C. INDIVIDUAL PROTECTION MEASURES

GENERAL ADVICE

The use and choice of personal protection equipment is related to the hazard of the product, the workplace and the way the product is handled. In general, we recommend as a minimum precaution that safety glasses with side-shields and work clothes protecting arms, legs and body be used. In addition any person visiting an area where this product is handled should at least wear safety glasses with side-shields.

RESPIRATORY PROTECTION

Where concentrations in air may exceed the limits given in this section, the use of a half face filter mask or air supplied breathing apparatus is recommended. If significant mists, vapors or aerosols are generated an approved respirator is recommended. A suitable filter material depends on the amount and type of chemicals being handled. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

HAND PROTECTION

It has been demonstrated that MMA easily penetrates rubber latex gloves. All vinyl gloves appeared to provide poorer protection. Polyethylene gloves give the best protection against MMA diffusion.

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Gloves should be replaced immediately if signs of degradation are observed. Most glove materials are of low chemical resistance. Consult PPE manufacturers. Replace gloves regularly.

SKIN PROTECTION

When handling this product, the use of a chemical resistant suit and rubber boots is recommended. Keep a safety shower available.

EYE PROTECTION

When handling this product, the use of splash chemical goggles is recommended. Keep an eye wash fountain available.

9. PHYSICAL AND CHEMICAL PROPERTIES

A. PHYSICAL APPEARANCE:	Clear, colorless liquid.
B. ODOR:	Characteristic odor.
C. ODOR THRESHOLD:	0.05 – 0.34 ppm [<i>Amoore J.E., Hautala E.: Odor as an aid to chemical safety: odor thresholds compared with threshold limit values and volatilities for 214 industrial chemicals in air and water dilution; J. Appl. Toxicol. 3: 272–290 (1983)</i>]
D. pH:	No data available.
E. MELTING/FREEZING POINT:	-48°C [<i>Method: Directive 84/449/EEC, A.1 "Melting point/melting range"</i>]
F. INITIAL BOILING POINT/BOILING POINT RANGE:	101°C [<i>Method: Directive 84/449/EEC, A.2 "Boiling point/boiling range"</i>]
G. FLASH POINT:	10°C (Open Cup) [<i>Method: Directive 84/449/EEC, A.9 "Flash point" or ASTM D. 92–52</i>]
H. EVAPORATION RATE:	3.1 (Ethyl acetate = 1)
I. FLAMMABILITY (GAS, SOLID):	Not applicable.
J. UPPER AND LOWER EXPLOSION LIMITS:	1.7 – 12.5 [<i>ICSC</i>]
K. VAPOUR PRESSURE:	3.9kPa [<i>ICSC</i>].
L. SOLUBILITY:	15g/L (water, 20°C) [<i>Method: Directive 84/449/EEC, A.6 "Water solubility"</i>]
M. RELATIVE VAPOUR DENSITY:	3.5 (air=1, 20°C) [<i>ICSC and IUCLID</i>]
N. SPECIFIC GRAVITY:	0.944
O. n-OCTANOL/WATER PARTITION COEFFICIENT:	1.38 [<i>Method: other (measured): as OECD 107, flask shaking method</i>]
P. AUTOIGNITION TEMPERATURE:	421°C (1,013 hPa)
Q. DECOMPOSITION TEMPERATURE:	No data available.
R. VISCOSITY:	0.60 mPa s at 20°C (method: DIN 51 562)

10. STABILITY AND REACTIVITY

A. CHEMICAL STABILITY

Inhibited methyl methacrylate is stable at room temperature for a limited storage period. Vapors are uninhibited and may form polymers in vents, causing stoppage. Polymerization may be caused by elevated temperature, oxidizers, peroxides, or sunlight.

B. POSSIBILITY OF HAZARDOUS REACTIONS

The product is readily polymerized by light, heat, or oxidants without inhibitor. If the polymerization takes place inside some containers, it is subject to violent rupture [*IUCLID*].

C. CONDITIONS TO AVOID

Insufficient inhibitor, incompatibles, heat, flame and ignition sources.

D. INCOMPATIBLE MATERIALS

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Contact with polymerization catalysts (e.g. peroxides, persulfates), nitric acid, strong oxidizers and other bases (e.g. ammonia, amines), halogens and halogen compounds.

E. HAZARDOUS DECOMPOSITION PRODUCTS

Oxides of carbon (CO_x).

11. TOXICOLOGICAL INFORMATION**A. INFORMATION ON THE LIKELY ROUTES OF EXPOSURE**

EYE CONTACT: Yes.

SKIN CONTACT: Yes.

INGESTION: No.

INHALATION: Yes (vapor, mist).

B. SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL AND TOXICOLOGICAL CHARACTERISTICS

No data available.

C. DELAYED AND IMMEDIATE EFFECTS AND ALSO CHRONIC EFFECTS FROM SHORT AND LONG TERM EXPOSURE**ACUTE TOXICITY:**

- Oral: The product is not acute toxic according to GHS (Globally Harmonized Systems classification system).
- Skin: The product is not acute toxic according to GHS (Globally Harmonized Systems classification system).
- Inhalation: Mist or vapor may irritate the respiratory tract. Mist or vapor may cause headache, chest pain, vomiting, nausea and narcosis. Very high levels may cause pulmonary edema and death.

SKIN CORROSION/IRRITATION:

Causes irritation to skin.

SERIOUS EYE DAMAGE/IRRITATION:

Irritating, and may injure eye tissue if not removed promptly.

RESPIRATORY OR SKIN SENSITIZATION:

Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.
Inhalation of product mist or vapors may cause respiratory allergy in some individuals.

GERM CELL MUTAGENICITY:

Not expected to cause mutagenicity based on some mutagenicity assay.

CARCINOGENICITY:

IARC Overall Evaluation: 3 (not classifiable as to carcinogenicity in humans).

ACGIH Carcinogen Category: A4 (not classifiable as to carcinogenicity in humans).

None of the substances in this product are listed as carcinogens in humans by the International Agency for Research on Cancer (IARC), American Conference of Governmental Industrial Hygienists (ACGIH) or the National Toxicology Program (NTP).

REPRODUCTIVE TOXICITY:

Caused teratogenic effects (maternally toxic, foetal toxicity) on laboratory animals [EU-RAR No.22 (2002)].

SPECIFIC TARGET ORGAN/SYSTEMIC TOXICITY – SINGLE EXPOSURE:

May cause respiratory irritation and narcotic effects.

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SPECIFIC TARGET ORGAN/SYSTEMIC TOXICITY – REPEATED EXPOSURE:

Causes damage to respiratory system and central nervous system through prolonged or repeated exposure.

ENVIRONMENTAL HEALTH CRITERIA:

None known. No data available.

ASPIRATION HAZARD:

None known. No data available.

D. NUMERICAL MEASURES OF TOXICITY (SUCH AS ACUTE TOXICITY ESTIMATES)
ACUTE ORAL TOXICITY:

Species	LD50	Test Descriptor / Reference
Rat	7,872 mg/kg	RTECS

ACUTE DERMAL TOXICITY:

Species	LD50	Test Descriptor / Reference
Rabbit	> 5,000 mg/kg	RTECS

ACUTE INHALATION TOXICITY:

Species	LC50	Test Descriptor / Reference
Rat	78,000 mg/m ³ /4hrs	RTECS

SKIN IRRITATION:

Rabbit 0.5 ml, occluded, 4 hour, effect: Moderately irritating [Rohm and Haas (1982)].

EYE IRRITATION:

Rabbit, effect: Moderately irritating [Rohm and Haas (1988)].

MUTAGENICITY:

Salmonella typhimurium reverse mutation assay: 10–10,000 ug/plate (+-S9), result: negative (OECD 471 (1987)).

Micronucleus assay (in vivo): mouse, result: negative (Method: OECD 474 (1991)).

SENSITIZATION:

Guinea pig (guinea pig maximization test), result: sensitizing.

For sensitization, the experimental dentin primers were diluted with olive oil and acetone 7 : 3 (v/v). As antigen MMA was tested at concentrations of 0.2, 1 and 5 % by weight [Katsuno K., Manabe A., Itoh K., Hisamitsu H., Wakumoto S., Nakayama S., Yoshida T.; A delayed hypersensitivity reaction to dentin primer in the guinea pig; J. Dent. 23(5): 295 – 299 (1995)].

12 ECOLOGICAL INFORMATION
A. TOXICITY
ACUTE FISH RESULTS:

Species	Exposure	LC50	Test Descriptor / Reference
Lepomis macrochirus	96 hrs	191 mg/L	EPA, 1975
Oncorhynchus mykiss	96 hrs	> 79 mg/L	EPA, 40 CFR Part 797 Guideline 797.1400

ACUTE INVERTEBRATE RESULTS:

Species	Exposure	EC50	Test Descriptor / Reference
Daphnia magna (Crustacea)	48 hrs	69 mg/L	EPA, 1975, flow through protocol
Daphnia magna (Crustacea)	24 hrs	720 mg/L 1,042 mg/L (EC100)	-

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AQUATIC PLANTS (e.g. ALGAE) RESULTS:

Species	Exposure	EC50	Test Descriptor / Reference
Scenedesmus quadricauda (Algae)	7 days	37 mg/L	-
Scenedesmus quadricauda (Algae)	4 days	170 mg/L	OECD Guideline 201 (1990)

B. PERSISTENCE AND DEGRADABILITY

The organic portion of this substance is expected to be biodegrade to a moderate extent.

- Biodegradation: 88 % after 28 days (aerobic).
 - * 60 % biodegradation was not reached within 10 days of passing the 10 % level
 - Result: Not readily biodegradable according to EEC criteria [OECD-guideline 301 D, GLP (1992)].
- Biodegradation: 32 % after 28 days (aerobic) [OECD Guide-line 301 C "Ready Biodegradability: Modified MITI Test (I)" (1989)].
- Biodegradation: 94.3 % (14 days (BOD test)) [Safety assessment for Existing Chemicals, JAPAN (1992)].

C. BIOACCUMULATIVE POTENTIAL

MMA is not expected to significantly bioaccumulation due to low bioaccumulation factor (BCF).

- BCF = 2 – 6.59 (Method: calculated) [Lyman W.J., Reehl W.F., Rosenblatt D.H.; Handbook of chemical property estimation methods; Environmental behavior of organic compounds; McGraw-Hill, New York, NY, 4.2–4.33, 5.1–5.30 (1982)]
- BCF = 2.350 (Method: calculated) [Safety assessment for Existing Chemicals, JAPAN (2002)]

D. MOBILITY IN SOIL

If MMA released into the soil, MMA is expected to quickly evaporate.

On the basis of its vapor pressure and its low absorption to soil ($K = 21.3 - 34$), MMA is expected to volatilize relatively rapidly from soil [Online literature search, Environfate data base, 1991 SRC, 1988].

E. OTHER ADVERSE EFFECTS

None known. No data available.

13. DISPOSAL CONSIDERATIONS
A. DISPOSAL METHODS

Must be disposed of as a special waste in accordance with regulations for special waste.

Small quantities may be incinerated under controlled conditions in incinerators suitable for methacrylates.

Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility.

Consult local, state, and federal regulations for specific requirements.

B. PRECAUTIONS (ON DISPOSAL OF COTAMINATED CONTAINERS AND PACKAGES)

Do not dispose of wastes in local sewer or with normal garbage. Combustion products are carbon monoxide, carbon dioxide and water.

14. TRANSPORT INFORMATION

* The following results are for the product.

- A. UN NUMBER: 1247.
- B. UN PROPER SHIPPING NAME: METHYL METHACRYLATE MONOMER, STABILIZED.
 - * Technical Name(s) -
- C. TRANSPORT HAZARD CLASS(ES): 3.

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- D. PACKING GROUP, IF APPLICABLE: II.
- E. ENVIRONMENTAL HAZARDS: Not regulated.
- F. SPECIAL PRECAUTIONS FOR USER: No data available.

15.	REGULATORY INFORMATION
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SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

EUROPE: This chemical substance is classified in the Annex I of Directive 67/548/EEC.

Hazard symbols:



Indication(s) of danger: F, Xi

Risk phrases:

R11: Highly flammable.

R37/38: Irritating to respiratory system and skin.

R43: May cause sensitization by skin contact.

Safety phrases:

S2: Keep out of the reach of children.

S24: Avoid contact with skin.

S37: Wear suitable gloves.

S46: If swallowed, seek medical advice immediately and show this container or label.

U.S. FEDERAL, ENVIRONMENT

Clean Air Act Section 111, SOCM Intermediate or Final Volatile Organic Compounds (40 CFR 60.489)

CAS RN: 80-62-6

Name: METHYL METHACRYLATE

Clean Air Act Section 112, Hazardous Air Pollutants, as amended by 40 CFR 63 (December 19, 2005)

CAS RN: 80-62-6

Name: METHYL METHACRYLATE

Hazardous Organic NESHAP (HON) Synthetic Organic Chemicals (40 CFR 63.100-.106, Table 1)

CAS RN: 80-62-6

Name: METHYL METHACRYLATE

Hazardous Organic NESHAP (HON) Hazardous Air Pollutants (40 CFR 63.100-.106, Table 2)

CAS RN: 80-62-6

Name: METHYL METHACRYLATE

Clean Water Act Section 311 Hazardous Chemicals (40 CFR 116.4)

CAS RN: 80-62-6

Name: METHYL METHACRYLATE

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

CAS RN: 80-62-6

Name: METHYL METHACRYLATE

The Reportable Quantity Code: C

The Reportable Quantity is: 1000 lbs.

RCRA Appendix VII: Hazardous Constituents (40 CFR 261, App. VII, Basis for Listing Hazardous Waste)

CAS RN: 80-62-6

Name: METHYL METHACRYLATE

RCRA Appendix VIII List of Hazardous Constituents (40 CFR 261)

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CAS RN: 80-62-6

Name: 2-PROPENOIC ACID, 2-METHYL-, METHYL ESTER

EPA Hazardous Waste Number: U162

RCRA D List of Characteristic Hazardous Wastes (40 CFR 261.21-24)

CAS RN: 80-62-6 regulated as a member of the Generics group for CAS RN: D001

Generics group name: UNLISTED HAZARDOUS WASTE: CHARACTERISTIC OF IGNITABILITY

The EPA Hazardous Waste Number: D001

NIOSH Recommended Safety and Health Standards for Hazardous Agents in the Workplace, Health Effects

CAS RN: 80-62-6

Name: METHYL METHACRYLATE

NIOSH Health Effects: Respiratory irritation

U.S. FEDERAL, RIGHT-TO-KNOW

CERCLA Hazardous Substances [other than radionuclides] (40 CFR 302.4)

CAS RN: 80-62-6

Name: 2-PROPENOIC ACID, 2-METHYL-, METHYL ESTER

The Reportable Quantity (RQ): 1000 lbs.

EPCRA (SARA Title III) Section 313 Toxic Chemical (Reporting Form R Instructions for 2006, as revised January 2007)

CAS RN: 80-62-6

Name: METHYL METHACRYLATE

De Minimis Concentration for Section 313: 1.0 %.

Reporting threshold for manufacturing and processing: 25000 lbs

Reporting threshold for other uses: 10000 lbs

HMS Chemical Ratings (Hazardous Materials Information System, Chemical Ratings Guide, Third Edition, 2002)

CAS RN: 80-62-6

Name: METHYL METHACRYLATE

Health Hazard: 2 Moderate.

Chronic Health Hazard: -

Flammability Hazard: 3 Serious.

Physical Hazard: 1 Slight.

CANADA

Canada. WHMIS Ingredient Disclosure List (Can. Gaz., Part II, Vol.122, No.2, January 20, 1988)

CAS RN: 80-62-6

Name: METHYL METHACRYLATE

Canada's WHMIS item number from English Ingredient Disclosure List: 1059

Canada's WHMIS Concentration Threshold: 1 %.

Quebec. Guidance WHMIS Classifications (CSST/SRT), May 5, 2007

CAS RN: 80-62-6

Name: METHYL METHACRYLATE

Classification: B2, D2B

Disclosure level: 1.0 %

Disclosure according to Ingredient Disclosure List

CHINA

China. List of Dangerous Goods (GB 12268-2005)

CAS RN: 80-62-6

Name: METHYL METHACRYLATE MONOMER, STABILIZED

UN Dangerous Goods Number(s) (UN Number): 1247

Dangerous Goods Classification(s): 3

Dangerous Goods Packing Group(s): II

China Dangerous Goods Number(s) (CN Number): 32149

Note(s): Flammable liquids

China. Classification and Labeling of Dangerous Chemical Substances Commonly Used (GB 13690 - 92)

CAS RN: 80-62-6

Name: METHYL METHACRYLATE (STABILIZED)

PRODUCT	SIWHS02-15-MS-01
MMA	

Classification Section: Class 3: Combustible Liquids: Medium flashing point liquid

Classification: F (Flammable)

Dangerous Properties: 5.22, 5.104, 5.109

Labeling: Exposure to excessive heat, open flame or strong oxidizing agents can readily cause fire.

KOREA

Korea. Dangerous Substances Threshold Quantity (Presidential Decree of Dangerous Substances Safety Management Act No. 18406, Schedule 1, May 29, 2004)

CAS RN: 80-62-6

Generics group name: No. 1 water-insoluble petroleum liquids with a flash point below 21°C

Class: 4 (Flammable Liquids)

Threshold quantity: 200 liters

NATIONAL FIRE PROTECTION ASSOCIATION - NFPA Ratings (USA)

Health: 2, Flammability: 3, Reactivity: 2, Specific hazard: -

0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme

INTERNATIONAL CHEMICAL CONTROL LAWS

EUROPE

The substance in this product is included in or exempted from the EINECS or ELINCS inventories.

U.S.

The substance in this product are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710).

JAPAN

The substance in this product is comply with the Law Regulating the Manufacture and Importation of Chemical Substances and are listed on the Ministry of Economy, Trade and Industry (METI).

KOREA

The substance in this product is comply with the Toxic Chemical Control Law (TCCL) and is listed on the Existing Chemicals Inventory (KECI).

Toxic Chemicals List - None of the component of this product is regulated under TCCL.

Observational Chemicals List - None of the component of this product is regulated under TCCL.

16.	OTHER INFORMATION
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This product material safety data sheet provides health and safety information. The above information is believed to be correct but does not propose to be all inclusive and shall be used only as a guide. LG MMA Corporation shall not be held liable for any damage resulting from handling or from contact with the above product. Each individual should make a determination as to the suitability of the information for their particular purpose(s). Various government agencies may have specific regulations regarding the transportation, handling, storage, use, or disposal of this product which may not be covered by this MSDS. The user is responsible for full compliance.

A. REFERENCES

Guideline for Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Regulated chemicals info. produced by the National Institute of Technology and Evaluation (Japan).

WHO/IPCS : International Chemical Safety Cards (ICSC).

EU European Chemicals Bureau (ECB): International Uniform Chemical Information Database (IUCLID).

Registry of Toxic Effects of Chemical Substances (NIOSH).

Registry of Toxic Effects of Chemical Substances (RTECS).

Joint Assessment of Commodity Chemicals, Methyl methacrylate No. 30, European Centre for Ecotoxicology and Toxicology of Chemicals, Brussels (1995) (ECETOC).

European Union Risk Assessment Report (European Commission) (EU-RAR).

MSDS (MATERIAL SAFETY DATA SHEET)

PRODUCT	SIWHS02-15-MS-01
MMA	

Ariel WebInsight DB (3E Company).

B. OTHER INFORMATION

- Date issued: 27 October 2007
- Version number (GHS): 1.0
- Technical Support on the MSDS: RGB Chemicals Co., Ltd. (<http://rgbchemicals.com>).